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(54) **SYSTEM AND METHOD FOR SECURELY SYNCHRONIZING MULTIPLE COPIES OF A WORKSPACE ELEMENT IN A NETWORK**

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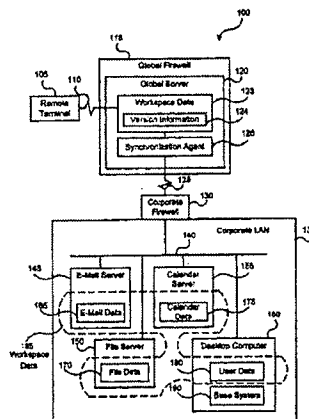
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*Primary Examiner*—Alford W. Kindred**(57) ABSTRACT**

A system includes a general synchronization module at the client site for operating within a first firewall and for examining first version information to determine whether a first workspace element has been modified. The system further includes a synchronization agent at a global server for operating outside the first firewall and for forwarding to the general synchronization module second version information which indicates whether an independently-modifiable copy of the first workspace element has been modified. A synchronization-start module is maintained at the client site for operating within the first firewall and for securely initiating the general synchronization module and the synchronization agent when predetermined criteria have been satisfied. The system further includes means for generating a preferred version from the first workspace element and from the copy by comparing the first version information and the second version information, and means for storing the preferred version at the first store and at the second store.

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**EX PARTE**  
**REEXAMINATION CERTIFICATE**  
**ISSUED UNDER 35 U.S.C. 307**

THE PATENT IS HEREBY AMENDED AS  
INDICATED BELOW.

Matter enclosed in heavy brackets [ ] appeared in the patent, but has been deleted and is no longer a part of the patent; matter printed in italics indicates additions made to the patent.

ONLY THOSE PARAGRAPHS OF THE  
SPECIFICATION AFFECTED BY AMENDMENT  
ARE PRINTED HEREIN.

Column 4, lines 20-38:

An operating system 240 includes a program for controlling processing by the CPU 205, and is typically stored in the data storage device 230 and loaded into the RAM 235 for execution. A service engine 245 includes a program for performing a particular service such as maintaining an e-mail data base, a calendar data base, a bookmarks data base or another file data base, and may be also stored in the data storage device 230 and loaded into the RAM 235 for execution. To perform a service, the service engine 245 operates on service data 250 (e.g., the e-mail data 165, the file data 170, the calendar data 175 or the user data 180), which is typically stored in the data storage device [250] 230. The service data 250 includes version information 255 indicating the date and time of the last modification. The service engine 245 operates to update the version information 255 whenever modifications are made. It will be appreciated that the portion of memory in the data storage device [250] 230 which contains the service data 250 is referred to as the service "store."

Column 4, lines 44-59:

An operating system 340 includes a program for controlling processing by the CPU 305, and is typically stored in the data storage device 330 and loaded into the RAM 335 for execution. A desktop service engine 345 (i.e., a particular service engine 245, FIG. 2) includes a service program for managing user data 180 (i.e., particular service data 250, FIG. 2) which includes version information 350 (i.e., particular version information 255, FIG. 2). The desktop service engine 345 may be also stored in the data storage device 330 and loaded into the RAM 335 for execution. The user data 180 may be stored in the data storage 330. As stated above with reference to FIG. 1, the base system [1 90] 190 operates to synchronize the workspace data 185 (which includes user data 180) with the workspace data 123. The base system 190 may be also stored in the data storage device 330 and loaded into the RAM 335 for execution.

Column 5, lines 35-49:

The synchronization-start module 420 includes routines for determining when to initiate synchronization of workspace data 123 and workspace data 185. For example, the synchronization-start module 420 may initiate data synchronization upon user request, at a particular time of day, after a predetermined time period passes, after a predetermined number of changes, after a user action such as user log-off or upon like criteria. The synchronization-start module 420 initiates data synchronization by instructing the general synchronization module 425 to begin execution of its routines. It will be appreciated that communications with synchronization agent 126 preferably initiate from within the

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cooperate LAN [1135] 135, because the typical cooperate firewall 130 prevents in-bound communications and allows out-bound communications.

Column 6, lines 15-27:

5 The content-based synchronization module 430 includes routines for reconciling two or more modified versions in workspace data 123, 185 of the same workspace element. For example, if the original and the copy of a user workspace element have both been modified independently since the last synchronization, the [contentbased] *content-based* synchronization module 430 determines the appropriate responsive action. The content-based synchronization module 430 may request a user to select the preferred one of the modified versions or may respond based on preset preferences, i.e., by storing both versions in both stores or by integrating the changes into a single preferred version which replaces each modified version at both stores.

Column 6, lines 28-41:

FIG. 5 is a block diagram illustrating details of the synchronization agent 126, which includes a communications module 505 (similar to the communications module 405 described above with reference to FIG. 4) and a general synchronization module 510 (similar to the general synchronization module 425 described above also with reference to FIG. 4). The communications module 505 includes routines for compressing data, and routines for communicating via the communications channel 125 with the base system 190. The communications module 505 may further include routines for establishing a secure communications channel through the global firewall [126] 115 and through the corporate firewall 130.

Column 6, lines 42-56:

The general synchronization module 510 includes routines for comparing the version information 124 with the last synchronization signature 435, and routines for forwarding to the general synchronization module 425 version information 124 determined to be modified. The general synchronization module 510 may [either] maintain its own last synchronization signature 435 copy (not shown). Alternatively, the request to synchronize from the base system 190 may include a copy of the last synchronization signature 435. The general synchronization module 510 further includes routines for receiving preferred versions of workspace data 185 workspace elements from the general synchronization module 425, and routines for forwarding preferred versions of workspace data 123 workspace elements to the general synchronization module 425.

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim 19 is cancelled.

Claims 1-2, 6-8, 10-11 and 21-25 are determined to be patentable as amended.

Claims 3-5, 9, 12-18 and 20, dependent on an amended claim, are determined to be patentable.

1. A computer-based method comprising the steps of:

(a) *establishing a communications channel through a firewall using an HTTP port or an SSL port;*

(b) generating first examination results from first version information which indicates whether a first workspace element stored at a first store within [a] the firewall has been modified;

(b)c) generating second examination results from second version information which indicates whether an independently-modifiable copy of the first workspace element has been modified, the copy being stored at a second store on a smart phone outside the firewall;

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([c]d) initiating steps ([a]b) and ([b]c) from within the firewall through the communications channel when predetermined criteria have been satisfied;

([d]e) generating a preferred version from the first workspace element and from the copy based on the first and second examination results, wherein if only one of the first workspace element and the copy has been modified, then the step of generating includes selecting the one as the preferred version; and

([e]f) storing the preferred version at the first store and at the second store.

2. [The method of claim 1] A computer-based method comprising the steps of:

(a) generating first examination results from first version information which indicates whether a first workspace element stored at a first store within a firewall has been modified;

(b) generating second examination results from second version information which indicates whether an independently-modifiable copy of the first workspace element has been modified, the copy being stored at a second store outside the firewall;

(c) initiating steps (a) and (b) from within the firewall when predetermined criteria have been satisfied;

(d) generating a preferred version from the first workspace element and from the copy based on the first and second examination results; and

(e) storing the preferred version at the first store and at the second store;

wherein the second store is on a global server outside the firewall and which is protected by a global firewall.

6. [The method of claim 1 further comprising,] A computer-based method comprising the steps of:

(a) generating first examination results from first version information which indicates whether a first workspace element stored at a first store within a firewall has been modified;

(b) generating second examination results from second version information which indicates whether an independently-modifiable copy of the first workspace element has been modified, the copy being stored at a second store outside the firewall;

(c) initiating steps (a) and (b) from within the firewall when predetermined criteria have been satisfied;

(d) generating a preferred version from the first workspace element and from the copy based on the first and second examination results;

(e) storing the preferred version at the first store and at the second store; and

before generating the first examination results, the step of updating the first version information whenever the first workspace element is modified.

7. [The method of claim 1 further comprising,] A computer based method comprising the steps of:

(a) generating first examination results from first version information which indicates whether a first workspace element stored at a first store within a firewall has been modified;

(b) generating second examination results from second version information which indicates whether an independently-modifiable copy of the first workspace element has been modified, the copy being stored at a second store outside the firewall;

(c) initiating steps (a) and (b) from within the firewall when predetermined criteria have been satisfied;

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(d) generating a preferred version from the first workspace element and from the copy based on the first and second examination results;

(e) storing the preferred version at the first store and at the second store; and

before generating the second examination results, the step of updating the second version information whenever the copy is modified.

8. [The method of claim 1] A computer-based method comprising the steps of:

(a) generating first examination results from first version information which indicates whether a first workspace element stored at a first store within a firewall has been modified;

(b) generating second examination results from second version information which indicates whether an independently-modifiable copy of the first workspace element has been modified, the copy being stored at a second store outside the firewall;

(c) initiating steps (a) and (b) from within the firewall when predetermined criteria have been satisfied;

(d) generating a preferred version from the first workspace element and from the copy based on the first and second examination results;

(e) storing the preferred version at the first store and at the second store; and

wherein if only one of the first workspace element and the copy has been modified, then the step of generating includes selecting the one as the preferred version.

10. A system comprising:

a communications channel through a firewall comprising one of an HTTP port and an SSL port;

a general synchronization module for operating within [a] the first firewall and for examining first version information to determine whether a first workspace element at a first store has been modified;

a synchronization agent for operating outside the first firewall and for forwarding to the general synchronization module second version information which indicates whether an independently modifiable copy of the first workspace element at a second store on a smart phone has been modified;

a synchronization-start module for operating within the first firewall and for initiating the general synchronization module and the synchronization agent when predetermined criteria have been satisfied;

means for generating a preferred version from the first workspace element and from the copy by comparing the first version information and the second version information, wherein if only one of the first workspace element and the copy has been modified, then the means for generating selects the one as the preferred version; and

means for storing the preferred version at the first store and at the second store.

11. The system of claim 10 further comprising a communications module for communicating through the first firewall, wherein the first firewall is positioned between a trusted network and the Internet.

21. A system comprising:

first means for generating first examination results from first version information which indicates whether a first workspace element stored at a first store within a firewall has been modified;

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second means for generating second examination results from second version information which indicates whether an independently-modifiable copy of the first workspace element has been modified, the copy being stored at a second store *on a smart phone* outside the firewall;

*means for updating the first version information whenever the first workspace element is modified or updating the second version information whenever the copy is modified;*

means for initiating the first and second means from within the firewall when predetermined criteria have been satisfied;

means for generating a preferred version from the first workspace element and from the copy based on the first and second examination results; and

means for storing the preferred version at the first store and at the second store.

22. A computer-readable storage medium storing program code for causing a computer-based system to perform the steps of:

(a) generating first examination results from first version information which indicates whether a first workspace element stored at a first store within a firewall *positioned between a trusted network and the Internet* has been modified;

(b) generating second examination results from second version information which indicates whether an independently-modifiable copy of the first workspace element has been modified, the copy being stored at a second store *on a smart phone* outside the firewall;

(c) initiating steps (a) and (b) from within the firewall *through an Internet communications channel* when predetermined criteria have been satisfied;

(d) generating a preferred version from the first workspace element and from the copy based on the first and second examination results, *wherein if only one of the first workspace element and the copy has been modified, then selecting the one as the preferred version*; and

(e) storing the preferred version at the first store and at the second store.

23. A computer-based method comprising the steps of:

(a) *establishing a secure communications channel through a firewall using an HTTP port or an SSL port*;

(b) generating first examination results from first version information which indicates whether a first workspace element stored at a first store within [a] the firewall has been modified;

(c) *before generating the first examination results, the step of updating the first version information whenever the first workspace element is modified*;

(b)d generating second examination results from second version information which indicates whether an independently-modifiable copy of the first workspace

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element has been modified, the copy being stored at a second store outside the firewall;

(c)e initiating steps ([a]b) and ([b]d) from within the firewall when predetermined criteria have been satisfied;

(d)f determining based on the first and second examination results that both the first workspace element and the copy have been modified; and

(e)g storing both the first workspace element and the copy at the first store and at the second store, *wherein the second store comprises a smart phone*.

24. A system comprising:

first means for generating first examination results from first version information which indicates whether a first workspace element stored at a first store within a firewall has been modified;

second means for generating second examination results from second version information which indicates whether an independently-modifiable copy of the first workspace element has been modified, the copy being stored at a second store outside the firewall;

*means for updating the first version information whenever the first workspace element is modified or updating the second version information whenever the copy is modified*;

means for initiating the first and second means from within the firewall when predetermined criteria have been satisfied;

means for determining based on the first and second examination results that both the first workspace element and the copy have been modified; and

means for storing both the first [file] workspace element and the copy at the first store and at the second store, *wherein the second store comprises a smart phone*.

25. A system comprising:

a global server for operating outside a firewall and including memory for storing first workspace data and corresponding first version information; and

a synchronization agent for managing the first workspace data and the corresponding first version information and for communicating with remote clients; [and]

*means for updating the first version information whenever the first workspace element is modified*;

a remote client for operating within the firewall and including memory for storing second workspace data and corresponding second version information;

means for cooperating with the synchronization agent to synchronize the first workspace data with the second workspace data by examining the first version information and the second version information; and

a synchronization-start module for initiating workspace data synchronization between the global server and the remote client.

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